

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Southwest Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Royal Mouldings Limited
US 11 and Bear Creek Rd., Smyth County, Virginia
Permit No. SWRO10284

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Royal Mouldings Limited has applied for a significant modification of its Title V Operating Permit for its wood and plastic moulding manufacturing facility in Smyth County. The Department has reviewed the application and prepared a Title V Operating Permit.

Engineer/Permit Contact:_____

Date:

Air Permit Manager:_____ Date:

Deputy Regional Director:_____

Date:

FACILITY INFORMATION

Permittee

Royal Mouldings Limited
P.O. Box 610
Marion, VA 24354-0610

Facility

Royal Mouldings Limited
Intersection of US 11 and Bear Creek Rd.
Smyth County, Virginia

AFS ID No. 51-173-0002

SOURCE DESCRIPTION

SIC Code: 3089 and 2431 – Polyvinyl chloride (PVC), styrene and cellular polyvinyl chloride (CPVC) flakes are mixed, colored and extruded in the Main Plant. The extruded mouldings may then be routed to hotstamping, mylar lamination and cutting operations. Wood mouldings (SIC 2431) are also routed to the latter three operations. Final mixing and application of paint to both the plastic and wood mouldings take place in the Prefinish area. Six primary finishing lines include a catalytic drying oven for each, with one exhaust stack for the coating application and one stack for the drying oven. Five coating lines (6A, 8, 9, 10 and 12) have been removed. A total of 24 PVC extruders have been added since the original Title V permit was issued June 7, 1999. The addition of two water-based coating lines, the addition of two roll applicator print machines, increases in throughput limits for coating lines 1 and 2, and the addition of polyvinyl chloride and polystyrene throughput limits for the total extrusion process, serve as the basis for this significant modification of the Title V permit, as reissued December 20, 2004. All of the ovens are fired by natural gas. Coating systems consist of either fan or curtain coaters. Fan coaters have limited atomization, are usually used with high solids coatings, and may be controlled by filters to control particulate emissions. Finally, a printing process applies ink to plastic mouldings for a wood grain appearance. These inks are applied by moving green rolls, which are produced onsite by a molding, curing and glazing process.

The facility is a Title V major source of Volatile Organic Compounds (VOC). This source is located in an attainment area for all pollutants, and is a PSD minor source. The facility was previously permitted under minor NSR permits dated March 4, 1980, February 21, 1997 (as amended March 12, 2002 and March 21, 2003) and February 9, 2005.

COMPLIANCE STATUS

The last inspection on July 1, 2004, indicated that no problems were noted at the facility in regard to all process operations. Reviews of required Title V submittals such as semiannual monitoring reports and annual compliance certifications also indicate compliance.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following :

Emission Unit ID	Emission Unit Description & Construction Date (If known)	Capacity/ Size	Pollution Control Device (PCD)	PCD ID	Stack ID	Pollutant Controlled
Coating Lines 1 and 2		Subject to 9 VAC 5 Chapter 50 (New or Modified)				
CL 1 & CL 2	Two Allied Metals fan coater systems (1995)	2.25 gal/hr each	Fiberglass filters	CL 1-2 filters	CLS 1-2	PM (Particulate matter)
Coating Lines 3 Through 6		Subject to 9 VAC 5 Chapter 40 (Existing)				
CL 3-CL 6	Coating lines 3-6 (1968)	27.1 gal/hr (total)	Fiberglass filters	CL 3-6 Filters	CLS 3-6	PM
Storage Silos 1-4		Subject to 9 VAC 5 Chapter 40 (Existing)				
SS 1-4	Four PVC silos (1968)	5.35 tons/hr for all six silos	Two baghouses serving 4 silos		SSS 1-4	PM
Storage Silos 5-6		Subject to 9 VAC 5 Chapter 50 (New or Modified)				
SS 5-6	Two styrene silos (2001)	5.35 tons/hr for all six silos			SSS 5-6	PM
PVC Extruders		Subject to 9 VAC 5 Chapter 50 (New) and Chapter 40 (Existing)				
PVC-EX	PVC extruders (1968, 1998, 2000 and 2005)	7.772 tons/hr (total)			EXS 1-8	
Styrene Extruders		Subject to 9 VAC 5 Chapter 40 (Existing)				
STY-EX	Styrene extruders (1968)	1.702 tons/hr (total)			EXS 1-8	
Water-Based Coating Line #7		Subject to 9 VAC 5 Chapter 50 (New)				

Emission Unit ID	Emission Unit Description & Construction Date (If known)	Capacity/ Size	Pollution Control Device (PCD)	PCD ID	Stack ID	Pollutant Controlled
WB7	Spray booth & 1.44 MMBtu/hr natural gas-fired oven (2005)	5.5 gal/hr	Fiberglass filters	WB7 filter	WB7-SB & Oven	PM
Water-Based Coating Line #8			Subject to 9 VAC 5 Chapter 50 (New)			
WB8	Spray booth & 1.44 MMBtu/hr natural gas-fired oven (2005)	5.5 gal/hr	Fiberglass filters	WB8 filter	WB8-SB & Oven	PM
Mylar Adhesive Process			Subject to 9 VAC 5 Chapter 40 (Existing)			
MYL-1	2 laminating machines and one curing oven (1968)	1395.6 linear ft/hr				
Catalytic Ovens 1 and 2			Subject to 9 VAC 5 Chapter 50 (New or Modified)			
CO1 & CO2	Combination electric/nat. gas ovens as primary, gas-fired Weather-Rite furnaces are alternate sources. (1994)	1.8 MMBtu/hr each oven & 3.0 MMBtu/hr per furnace.			CO-Stacks 1 & 2	
Catalytic Ovens 3 and 4			Subject to 9 VAC 5 Chapter 50 (New or Modified)			
CO3 & CO4	Combination electric/nat. gas (1994)	4.0 MMBtu/hr each			CO-Stacks 3 & 4	
Catalytic Ovens 5 and 6			Subject to 9 VAC 5 Chapter 50 (New or Modified)			
CO5 & CO6	Combination electric/nat. gas (1994)	2.8 MMBtu/hr each			CO-Stacks 5 & 6	
Glaze Line			Subject to 9 VAC 5 Chapter 50 (New or Modified)			
GL	Glaze line spray booth (1983) and drying chamber	3.8 gal/day	CL filter		GLS	
Roll Applicator Print Machines			Subject to 9 VAC 5 Chapter 40 (Existing)			
Roll 1-10	10 roll applicator print machines inking mouldings from bath containers (1968)	28,246 linear ft/hr				
Roll Applicator Print Machines			Subject to 9 VAC 5 Chapter 50 (New)			
Roll 11-12	2 roll applicator print machines inking mouldings from bath containers (2004)	5,649 linear ft/hr				

Emission Unit ID	Emission Unit Description & Construction Date (If known)	Capacity/ Size	Pollution Control Device (PCD)	PCD ID	Stack ID	Pollutant Controlled
Green Roll Processing		Subject to 9 VAC 5 Chapter 40 (Existing)				
GRP-1	Molding, curing and glazing of Green Rolls (printing rolls) involving 3 electric vacuum drying ovens and 2 hoods (1968)	1 roll/hr			GRS 1	

EMISSIONS INVENTORY

Emissions are included below from the 2004 Emission Statement submitted to the Virginia Department of Environmental Quality for criteria pollutants.

Actual Emissions

	Criteria Pollutant Emission in Tons/Year				
Emission Unit	VOC	CO	SO ₂	PM ₁₀	NO _x
Facility	149			12	

2003 Facility Hazardous Air Pollutant Emissions

Pollutant	Hazardous Air Pollutant Emission in Tons/Year
Total HAPs	72.76

EMISSION UNIT APPLICABLE REQUIREMENTS – Coating Lines 1 & 2 (CL 1 & 2) and Roll Applicator Print Machines 1 – 12 (Roll 1 – 12)

Limitations

Facility limitations from the NSR permit issued February 9, 2005.

3. Particulate emissions from the Coating Lines 1 and 2 shall be controlled by fiberglass filters or equivalent. The fiberglass filters shall be provided with adequate access for inspection and shall be in operation when the spray booths are operating.

(9 VAC 5-50-260 and 9 VAC 5-80-1180 D)

5. The volatile organic compound throughput for the two Allied Metals paint application fan coater spray systems shall not exceed 64 tons per year, as a combined total, calculated as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

6. The particulate matter throughput for the two Allied Metals paint application fan coater spray systems shall not exceed 167.34 tons per year, as a combined total, calculated as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

7. The volatile organic compound throughput for the roll applicator print machines (1-12) shall not exceed 3.04 tons per year, as a combined total, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

15. Emissions from the operation of the two Allied Metals paint application fan coater spray systems, as a combined total, shall not exceed the limits specified below:

Particulate Matter	2.87 lb/hr	12.55 tons/yr
PM-10	2.87 lb/hr	12.55 tons/yr
Volatile Organic Compounds	23.15 lb/hr	64.0 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 3, 5 and 6.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

21. Emissions from the operation of Roll Coaters 1 through 12 as a combined total, shall

not exceed the limits specified below:

Volatile Organic Compounds 3.04 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Condition 7.

(9 VAC 5-80-1180 C and 9 VAC 5-50-260)

22. Visible emissions from each Allied Metals paint application fan coater spray system exhaust shall not exceed five (5) percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).

(9 VAC 5-80-1180, 9 VAC 5-50-20 and 9 VAC 5-50-260)

Monitoring

The permit contains a requirement for weekly visual observations on the exhaust of each paint application fan coater spray system. If visible emissions are present during any of the observations, a six-minute visible emission evaluation (VEE) must be performed in accordance with 40 CFR 60, Appendix A, Method 9. If the six-minute average opacity exceeds the permitted opacity limit, the Method 9 evaluation shall be immediately continued for a total evaluation time of 18 minutes or procedures to correct the visible emission condition shall be taken immediately. The corrective action shall be followed by a six-minute VEE in accordance with Method 9 to confirm compliance or 18 minutes if the opacity continues to be greater than 5%. This will satisfy the periodic monitoring requirement for the visible emission limitation included in the permit.

Recordkeeping

Facility recordkeeping requirements are included below from condition 24 of the NSR permit issued February 9, 2005.

24. The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Southwest Regional Office. These records shall include, but are not limited to:

- A monthly and annual material balance for the two Allied Metals paint application fan coater spray systems, including the throughput and emissions of VOC and particulate matter/PM-10. Annual throughput and emissions shall be calculated as the sum of each consecutive 12 month period.

- Material Safety Data Sheets (MSDS) or other vendor information showing VOC and solids content for each raw material, solvent, cleaner, or other formulations used in process operations at the facility.
- A monthly and annual material balance for the Roll Coaters 1 through 12, including the throughput and emissions of VOC. Annual throughput and emissions shall be calculated monthly as the sum of each consecutive 12 month period.

These records shall be available on site for inspection by the DEQ and shall be current for the most recent five (5) years.
(9 VAC 5-50-50)

The permit includes requirements for maintaining records of equipment malfunctions which could cause violations of the Title V permit, and operating procedures, maintenance schedules, and service records for all air pollution-related equipment. Required records for the visible emissions checks include the date, time, name of the emission unit, the applicable visible emissions requirement, the results of the observation, and the name of the observer.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard. The following requirement is contained in the NSR permit issued February 9, 2005.

3. The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. Test ports shall be provided at the appropriate locations.
(9 VAC 5-50-30 F)

Reporting

There are no specific reporting requirements for Coating Lines 1 and 2, other than the semiannual reporting and annual compliance certification requirements specified in the general conditions section of the permit.

EMISSION UNIT APPLICABLE REQUIREMENTS – Coating Lines 3 – 6 (CL 3-6) and Glaze Line (GL)

Limitations

Facility limitations from the NSR permit issued February 9, 2005.

3. Particulate emissions from the Coating Lines 3 through 6 and the Glaze Line shall be controlled by fiberglass filters or equivalent. The fiberglass filters shall be provided with adequate access for inspection and shall be in operation when the spray booths are operating.

(9 VAC 5-50-260 and 9 VAC 5-80-1180 D)

8. The volatile organic compound throughput for Coating Lines 3 through 6 shall not exceed 100 tons per year, as a combined total, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

9. The particulate matter throughput for Coating Lines 3 through 6 shall not exceed 70.7 tons per year, as a combined total, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

10. The volatile organic compound throughput for the Glaze Line shall not exceed 10 tons per year, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

11. The particulate matter throughput for the Glaze Line shall not exceed 7 tons per year, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

16. Emissions from the operation of Coating Lines 3 through 6, as a combined total, shall not exceed the limits specified below:

Particulate Matter	17.26 lb/hr	5.30 tons/yr
PM-10	17.26 lb/hr	5.30 tons/yr
Volatile Organic Compounds		100.0 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 3, 8 and 9.

(9 VAC 5-80-1180 C)

17. Emissions from the operation of the Glaze Line shall not exceed the limits specified below:

Particulate Matter	0.57 lb/hr	0.53 tons/yr
PM-10	0.57 lb/hr	0.53 tons/yr
Volatile Organic Compounds		10.0 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 3, 10 and 11.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-80, Standard for Visible Emissions – 20% opacity except for one 6-minute period not to exceed 60%. (Coating Lines 3-6)

9 VAC 5-50-80, Standard for Visible Emissions – 20% opacity except for one 6-minute period not to exceed 30%. (Glaze line)

Monitoring

The permit contains a requirement for visual observations on the exhausts of coating lines 3 through 6 and the Glaze Line once each calendar week when the units are operated for a period of time exceeding the time required for normal start-up. If visible emissions are present during any of the observations, a six-minute visible emission evaluation (VEE) must be performed in accordance with 40 CFR 60, Appendix A, Method 9. If the six-minute average opacity exceeds the permitted opacity limit, the Method 9 evaluation shall be immediately continued for a total evaluation time of 18 minutes or procedures to correct the visible emission condition shall be taken immediately. The corrective action shall be followed by a six-minute VEE in accordance with Method 9 to confirm compliance or 18 minutes if the opacity continues to be greater than 20%. This will satisfy the periodic monitoring requirement for the visible emission limitation included in the permit.

Recordkeeping

Facility recordkeeping requirements are included below from condition 24 of the NSR permit issued February 9, 2005.

24. The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Southwest Regional Office. These records shall include, but are not limited to:

- A monthly and annual material balance for the Coating Lines 3 through 6, including the throughput and emissions of VOC and particulate matter/PM-10. Annual throughput and emissions shall be calculated monthly as the sum of each consecutive 12 month period.
- Material Safety Data Sheets (MSDS) or other vendor information showing VOC and solids content for each raw material, solvent, cleaner, or other formulations used in process operations at the facility.
- A monthly and annual material balance for the Glaze Line, including the throughput and emissions of VOC and particulate matter/PM-10. Annual throughput and emissions shall be calculated monthly as the sum of each consecutive 12 month period.

These records shall be available on site for inspection by the DEQ and shall be current for the most recent five (5) years.
(9 VAC 5-50-50)

The Title V permit also requires records of annual hours of operation and emissions calculations for the purpose of compliance certification with the terms of this permit, including hourly emissions limitations. An example calculation of particulate emissions is included below:

PM emissions in lb/hr = [(PM throughput in tons/yr)(2000 lb/ton)/(annual operating hrs)] x (1 - transfer efficiency) x (1 - control efficiency)

A default transfer efficiency of 50% is used by DEQ for typical applications, unless a higher transfer efficiency can be documented by the permittee. Royal Mouldings provides an 85% control efficiency for the coating application filters, and this is also the default value used by this agency.

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include results of visible emissions checks and emission calculations.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard. The following requirement is contained in the NSR permit issued February 9, 2005.

3. The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. Test ports shall be provided at the appropriate locations.
(9 VAC 5-50-30 F)

Reporting

There are no specific reporting requirements for Coating Lines 3-6 and the Glaze Line, other than the semiannual reporting and annual compliance certification requirements specified in the general conditions section of the permit.

EMISSION UNIT APPLICABLE REQUIREMENTS – Storage Silos 1-6 (SS 1-6)

Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-40-80, Standard for Visible Emissions – 20% opacity except for one 6-minute period not to exceed 60%. (SS 1-4)

9 VAC 5-50-80, Standard for Visible Emissions – 20% opacity except for one 6-minute period not to exceed 30%. (SS 5-6)

9 VAC 5-40-260, Standard for Particulate Matter – Process Weight Rate Table
Emissions from general processes are not to exceed corresponding quantities given by the formula, $E = (4.10)P^{0.67}$. The process weight rate for the storage silos is given as 5.35 tons/hr in the application for reissuance of the Title V permit. Accordingly, the maximum allowed particulate emission rate is given by:

$$E = (4.10)(5.35)^{0.67} = 12.61 \text{ lb/hr}$$

Monitoring

Visible emissions checks shall be performed weekly on the storage silos, during loading and

unloading, for periods of normal daily operations. If visible emissions occur, Royal Mouldings will perform a six-minute VEE in accordance with Method 9 (40 CFR 60, Appendix A). If the six-minute average opacity exceeds the permitted opacity limit, the Method 9 evaluation shall be immediately continued for a total evaluation time of 18 minutes or procedures to correct the visible emission condition shall be taken immediately.

The particulate matter emission limit will be evaluated on the basis of process throughputs, emissions calculations and monthly recordkeeping, with annual emissions and throughputs calculated as the sum of each consecutive 12 month period. The application for the current Title V permit notes the applicability of the AP-42 emission factors for talc processing to the fines loading and unloading associated with the storage silo and extrusion operations. The uncontrolled emission factor for ground talc storage bin loading of 0.3168 lb/ton, coupled with a control efficiency of 99% for baghouse control with the four PVC silos. Emissions from the two styrene silos will be calculated on the basis of no controls. Emissions for the storage silos will be calculated in the following manner:

$$\begin{aligned} (\text{PM emissions in lb/yr}) &= (2/3)(5.35 \text{ tons/hr})(7480 \text{ hr/yr})(0.3168 \text{ lb/ton})(1-0.99) && (\text{PVC silos}) \\ (\text{PM emissions in lb/yr}) &= 84.5 \text{ lb/yr} && (\text{PVC silos}) \end{aligned}$$

$$\begin{aligned} (\text{PM emissions in lb/yr}) &= (1/3)(5.35 \text{ tons/hr})(7480 \text{ hr/yr})(0.3168 \text{ lb/ton}) && (\text{Styrene silos}) \\ (\text{PM emissions in lb/yr}) &= 4225.9 \text{ lb/yr} && (\text{Styrene silos}) \end{aligned}$$

Hourly emissions can be calculated by dividing the annual emissions by the hours of operation for the same 12 month period. Worst-case emissions are calculated below using maximum capacities for annual operation for 7480 hours per year:

$$\begin{aligned} \text{Worst case annual PM emissions} &= 84.5 \text{ lb} + 4225.9 \text{ lb} = 4310.4 \text{ lb} \\ (4310.4 \text{ lb/yr}) / (7480 \text{ hours/yr}) &= 0.58 \text{ lb/hr} \end{aligned}$$

The resulting lb/hr value is below the 12.61 lb/hr limit.

Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include results of visible emissions checks and emission calculations.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

There are no specific reporting requirements for the extrusion operations, other than the semiannual reporting and annual compliance certification requirements specified in the general conditions section of the permit.

EMISSION UNIT APPLICABLE REQUIREMENTS – Extrusion (Total)

Limitations

Royal Mouldings has added 24 PVC extruders since the issuance of the original Title V permit. These were determined to be exempt from NSR permitting. The company requested limits on extrusion operations in the February 2005 NSR permit, in order to avoid PSD implications, while also gaining flexibility in the use of individual extruders. Accordingly, annual throughput and emissions limits were established for the extrusion of PVC and for the extrusion of polystyrene.

Facility limitations from the NSR permit issued February 9, 2005

4. Fugitive emission controls shall include the following, or equivalent, as a minimum:

Volatile organic compounds shall not be intentionally spilled, discarded to sewers, stored in open containers, or handled in any other manner that would result in evaporation beyond that consistent with air pollution control practices for minimizing emissions.

(9 VAC 5-50-260, 9 VAC 5-50-20, and 9 VAC 5-50-90)

13. The throughput of polyvinyl chloride (PVC) to the extrusion operations shall not exceed 70,000,000 pounds per year, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

14. The throughput of polystyrene to the extrusion operations shall not exceed 15,000,000 pounds per year, calculated monthly as the sum of each consecutive 12 month period.

(9 VAC 5-80-1180 D)

19. Emissions from the operation of the PVC extrusion operations, as a combined total, shall not exceed the limits specified below:

Particulate Matter	2.22 tons/yr
PM-10	2.22 tons/yr
Volatile Organic Compounds	2.07 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 4 and 13.
(9 VAC 5-80-1180 C)

20. Emissions from the operation of the polystyrene extrusion operations, as a combined total, shall not exceed the limits specified below:

Particulate Matter	0.48 tons/yr
PM-10	0.48 tons/yr
Volatile Organic Compounds	33.3 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 4 and 14.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

The following Virginia Administrative Codes that have specific emission requirements have also been determined to be applicable:

9 VAC 5-50-80, Standard for Visible Emissions – 20% opacity except for one 6-minute period not to exceed 30%.

9 VAC 5-40-260, Standard for Particulate Matter – Process Weight Rate Table
Emissions from general processes are not to exceed corresponding quantities given by the formula, $E = (4.10)P^{0.67}$. The process weight rate for the total extrusion process was calculated as an aggregate capacity of 7.88 tons/hr in the current Title V permit. The 24 new extruders add 1.59 tons/hr to the process weight rate total. This yields a new process rate of 9.47 tons/hr for the total extrusion process. Accordingly, the maximum allowed particulate emission rate is given by:

$$E = (4.10)(9.47)^{0.67} = 18.49 \text{ lb/hr}$$

Monitoring

Visible emissions checks shall be performed weekly on the 8 exhaust stacks for the total extrusion process during periods of normal daily operations. The new extruders discharge from stacks 1 through 6 (EXS 1-6) for the PVC extrusion process. If visible emissions occur, Royal Mouldings will perform a six-minute VEE in accordance with Method 9 (40 CFR 60, Appendix A). If the six-minute average opacity exceeds the permitted opacity limit, the Method 9 evaluation shall be immediately continued for a total evaluation time of 18 minutes or procedures to correct the visible emission condition shall be taken immediately.

The hourly and annual particulate matter emission limits will be evaluated on the basis of process throughputs, emissions calculations and monthly recordkeeping, with annual emissions and throughputs calculated as the sum of each consecutive 12 month period. Royal Moulding's Title V application notes the applicability of the AP-42 emission factors for talc processing to the fines loading and unloading associated with the extrusion (and storage silo) operations. The uncontrolled emission factor for ground talc storage bin loading of 0.3168 lb/ton (accounting for 99% control for a fabric filter with the controlled emission factor) from Table 11.26.1 will be used, together with a 60% capture efficiency for the Main Plant building enclosure.

$$(\text{PM emissions in lb/yr}) = (\text{total annual throughput in tons}) \times (0.3168 \text{ lb/ton}) \times (1 - 0.6)$$

Hourly emissions can be calculated by dividing the annual emissions by the hours of operation for the same 12 month period. Worst-case annual emissions are calculated below using the annual throughput limits for PVC and polystyrene of 35,000 tons per year for PVC and 7,500 tons per year for polystyrene:

$$\text{PVC} - (35,000 \text{ tons/yr})(0.3168 \text{ lb/ton})(1 - 0.6)/(2000 \text{ lb/ton}) = 2.22 \text{ tons/yr}$$

$$\text{Polystyrene} - (7,500 \text{ tons/yr})(0.3168 \text{ lb/ton})(1 - 0.6)/(2000 \text{ lb/ton}) = 0.48 \text{ tons/yr}$$

$$\text{Worst-case total PM annual emissions} = 2.22 \text{ tons/yr} + 0.48 \text{ tons/yr} = 2.70 \text{ tons/yr}$$

Maximum annual hours of operation for extrusion are noted as 7,480 hours per year.

$$(2.70 \text{ tons/yr})(2000 \text{ lb/ton})/(7480 \text{ hr/yr}) = 0.72 \text{ lb/hr}$$

The resulting lb/hr value is below the 18.49 lb/hr limit.

Calculations of hourly and annual emissions of VOC shall make use of an emission factor of 59 lb of VOC per million pounds of PVC processed (from the 1996 vinyl pipe study), and a factor of 4,440 lb of VOC per million pounds of polystyrene processed (from "VOC Emission of Polymer Resins" by Polymer Solutions Incorporated). Hourly emissions can be calculated by dividing the annual emissions by the hours of operation for the same 12 month period.

Recordkeeping

Facility recordkeeping requirements are included below from condition 24 of the NSR permit issued February 9, 2005.

24. The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Southwest Regional Office. These records shall include, but are not limited to:

- Material Safety Data Sheets (MSDS) or other vendor information showing VOC and solids content for each raw material, solvent, cleaner, or other formulations used in process operations at the facility.
- Monthly and annual throughput in pounds of PVC resin to the extrusion operations. Annual throughput shall be calculated monthly as the sum of each consecutive 12 month period.
- Monthly and annual throughput in pounds of polystyrene resin to the extrusion operations. Annual throughput shall be calculated monthly as the sum of each consecutive 12 month period.

These records shall be available on site for inspection by the DEQ and shall be current for the most recent five (5) years.
(9 VAC 5-50-50)

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include results of visible emissions checks and emission calculations.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

There are no specific reporting requirements for the extrusion operations, other than the semiannual reporting and annual compliance certification requirements specified in the general conditions section of the permit.

EMISSION UNIT APPLICABLE REQUIREMENTS – Catalytic & Drying Ovens (CO1 -

CO6) and Water-Based Coating Lines 7 and 8 (WB7 and WB8)

Limitations

Facility limitations from the NSR permit issued February 9, 2005.

3. Particulate emissions from the water-based Coating Lines 7 and 8 shall be controlled by fiberglass filters or equivalent. The fiberglass filters shall be provided with adequate access for inspection and shall be in operation when the spray booths are operating.
(9 VAC 5-50-260 and 9 VAC 5-80-1180 D)

4. Fugitive emission controls shall include the following, or equivalent, as a minimum:

Volatile organic compounds shall not be intentionally spilled, discarded to sewers, stored in open containers, or handled in any other manner that would result in evaporation beyond that consistent with air pollution control practices for minimizing emissions.

(9 VAC 5-50-260, 9 VAC 5-50-20, and 9 VAC 5-50-90)

12. The throughput of the 5 Sheen Ext. WB Topcoat, or equivalent to the water-based coating lines 7 and 8 shall not exceed a total of 42,000 gallons per year, calculated monthly as the sum of each consecutive 12 month period.
(9 VAC 5-80-1180 D)

18. Emissions from the operation of the water-based Coating Lines 7 and 8, as a combined total, shall not exceed the limits specified below:

Particulate Matter	2.17 lb/hr	4.14 tons/yr
PM-10	2.17 lb/hr	4.14 tons/yr
Volatile Organic Compounds	13.64 lb/hr	26.04 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 3, 4 and 12.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

23. Visible emissions from each water-based coating line shall not exceed five (5) percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This

condition applies at all times except during startup, shutdown, and malfunction.
(9 VAC 5-50-20 and 9 VAC 5-50-260)

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80, Standard for Visible Emissions – 20% opacity except for one 6-minute period not to exceed 30%.

Monitoring

Visible emissions checks shall be performed weekly on the exhaust stacks for the oven and for the spray booth associated with each water-based coating line, and on the exhaust stacks for the catalytic and drying ovens, during periods of normal daily operations. If visible emissions occur, Royal Mouldings will perform a six-minute VEE in accordance with Method 9 (40 CFR 60, Appendix A). If the six-minute average opacity exceeds the permitted opacity limit, the Method 9 evaluation shall be immediately continued for a total evaluation time of 18 minutes or procedures to correct the visible emission condition shall be taken immediately.

Recordkeeping

Facility recordkeeping requirements are included below from condition 24 of the NSR permit issued February 9, 2005.

24. The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with the Director, Southwest Regional Office. These records shall include, but are not limited to:

- Material Safety Data Sheets (MSDS) or other vendor information showing VOC and solids content for each raw material, solvent, cleaner, or other formulations used in process operations at the facility.
- Monthly and annual throughput in gallons of 5 Sheen Ext. WB Topcoat, or equivalent, to the two water-based Coating Lines 7 and 8. Annual throughput shall be calculated monthly as the sum of each consecutive 12 month period.

These records shall be available on site for inspection by the DEQ and shall be current for the most recent five (5) years.
(9 VAC 5-50-50)

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include results of visible emissions checks and emission calculations.

Testing

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

Reporting

There are no specific reporting requirements for the catalytic and drying ovens, other than the semiannual reporting and annual compliance certification requirements specified in the general conditions section of the permit.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, and includes notification requirements for 40 CFR Part 63, Subpart PPPP - National Emission Standards for Surface Coating of Plastic Parts and Products.

Comments on General Conditions

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §§2.1-20.01:2 and §§10.1-1185 of the *Code of Virginia*, and the “Department of Environmental Quality Agency Policy Statement NO. 3-2001”.

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excesses emissions reporting within 4 hours. Section 9 VAC 5-80-250 also requires malfunction reporting; however, reporting is required within 2 days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to this section including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. This facility is subject to both 9 VAC 5-20-180 and 9 VAC 5-80-250. A facility may

make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within 4 daytime business hours of the malfunction.

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in section 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on General Condition F.

FUTURE APPLICABLE REQUIREMENTS

The coating lines must comply with the requirements of 40 CFR Part 63, Subpart PPPP - National Emission Standards for Surface Coating of Plastic Parts and Products by April 19, 2007.

INAPPLICABLE REQUIREMENTS

Citation	Title of Citation	Description of Applicability
40 CFR Part 60, Section 60.40c	Subpart Dc – Stds. of Performance for Small Industrial-Commercial-Institutional Steam Generating Unit	Not applicable – Boilers constructed prior to June 9, 1989 are less than 10 MMBtu/hr heat capacity
40 CFR Part 60, Section 60.110b	Subpart Kb – Stds. of Performance for Volatile Organic Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced After July 23, 1984	Not applicable – Storage Tank #6 for Styrene Reducer was constructed prior to July 23, 1984
40 CFR Part 63, Section 63.468	Subpart QQQQ – National Emission Standards for Surface Coating of Wood Building Products	Not applicable – Use of coatings falls under Subpart PPPP, as 95% or more of coatings are for plastic parts.
40 CFR Part 63, Section 63.80	Subpart JJ – National Emission Standards for Wood Furniture Manufacturing Operations	Not applicable – Royal Mouldings does not produce wood furniture or furniture components

The startup, shutdown, and malfunction opacity exclusion listed in 9 VAC 5-40-20 A 3 cannot be included in any Title V permit. This portion of the regulation is not part of the federally approved

state implementation plan. The opacity standard applies to existing sources at all times including startup, shutdown, and malfunction. Opacity exceedances during startup and shutdown will be reviewed with enforcement discretion using the requirements of 9 VAC 5-40-20 E, which state that "At all times, including periods of startup, shutdown, soot blowing and malfunction, owners shall, to the extent practicable, maintain and operate any affected facility, including associated air pollution control equipment, in a manner consistent with air pollution control practices for minimizing emissions."

Compliance Assurance Monitoring (CAM) requirements do not apply to Coating lines 1 through 6 and the Glaze Line, even though these lines have particulate emissions limits and require the use of filters to meet the same. This is due to throughput limits, which restrict particulate emissions to below major source levels without the required controls.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation ¹ (9 VAC_)	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
MGS 1-18	18 Modine Gas Space Heaters	9 VAC 5-80-720 A.		
GSH 19-47	29 Prefinish Plant Space Heaters	9 VAC 5-80-720 A		
AO1 & AO2	Natural gas-fired annealing ovens			9 VAC 5-80-720 C
NGSH 1-7	7 new gas space heaters	9 VAC 5-80-720 A		
	Temporary soil vapor & liquid extraction & remediation system		9 VAC 5-80-720 B (0.04 tons/yr VOC)	

¹The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

The draft permit was placed on public notice in the Smyth County News & Messenger on June 1, 2005, with a comment period through June 30, 2005. A copy of the public notice was provided to North Carolina, West Virginia and Tennessee as affected states. All persons on the Title V mailing list were sent a copy of the public notice by e-mail, fax or letter. No comments were received from EPA, affected states, or the public.